

## Remarks

The above Amendments and these Remarks are in reply to the Office Action mailed January 23, 2003.

### I. Rejection Under 35 U.S.C. §103

Claims 10-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Fullowan* (US 5,176,792) in view of *Moslehi* (US 5,192,849).

As discussed previously, *Fullowan* teaches depositing titanium, etched from the hard mask, onto the sidewalls being etched in the underlying tungsten material, in order to obtain vertical sidewalls and virtually no undercut (col. 3, lines 4-11). It is the presence of a sufficient amount of titanium etched from the mask that prevents undercutting in the tungsten layer. It would not be desirable to slow the etch rate of the mask, as a decrease in titanium can have a corresponding increase in undercutting of the tungsten (col. 3, lines 1-40). *Fullowan* therefore teaches away from "slowing the rate of erosion of the hard mask," as recited in amended claim 10. *Fullowan* takes advantage of hard mask erosion and would not obtain the same favorable results if hard mask etch were slowed.

*Moslehi* teaches a multipurpose RF chuck (abstract; col. 6, lines 26-68). There is no motivation to use the RF chuck of *Moslehi* with the process of *Fullowan*, as there is no teaching or suggestion in either reference that using an RF chuck would obtain the same favorable result of prevent undercutting of the tungsten layer with any likelihood of success.

The Examiner states in the Office Action of January 23, 2003 that the "reason to combine *Fullowan* in view of *Moslehi* would be for the purpose of improving reactive ion etch rate of the material being etched." The present application is drawn to a method for containing or minimizing the growth of a feature having a critical dimension (Title, Summary, Abstract). This problem, which is addressed by the claimed invention, uses a method including a step to "slow the rate of erosion of the hard mask." There is no discussion in either reference for slowing hard mask erosion rates. There is also no teaching or suggestion in either reference that combining the references would work to slow a rate of erosion, or that

slowing a rate of erosion would work to minimize critical dimension growth with any likelihood of success. Even if the “reason to combine *Fullowan* in view of *Moslehi* would be for the purpose of improving reactive ion etch rate of the material being etched,” to which Applicants do not necessarily agree, improving the ion etch rate is not a problem being solved by the claimed invention. It would be counterintuitive to think that a process to increase etch rate could be successful in slowing the rate of erosion of a mask.

Further, the Examiner has stated that it would have been obvious to provide energy to the reactor using the RF chuck in order to improve the etch rate. There is no teaching or suggestion in *Mosheli*, that an RF chuck can be used to slow an etch rate. Even if the references are combined, there is no teaching or suggestion in either reference for “slowing the rate of erosion of the hard mask” as recited in claim 10. As the limitations of claim 10 are neither taught nor suggested by *Fullowan* and *Moslehi*, either alone or in combination, claim 10 cannot be rendered obvious by these references.

Claims 13, 22, 25, 26, 28, 29, 30, and 34 recite similar limitations and should not be rendered obvious. Claims 11-12, 14-21, 23-24, 27, 31-33, and 35-49 depend from these claims and also should not be rendered obvious. Applicants therefore respectfully request that the rejection with respect to claims 10-49 be withdrawn.

## **II. Conclusion**

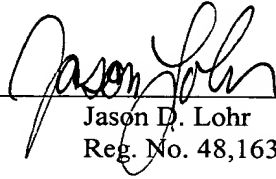
In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and a Notice of Allowance is requested. The Examiner is respectfully requested to telephone the undersigned before an advisory action is issued in order to avoid any unnecessary filing of an appeal.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

Date: June 23, 2003

By: \_\_\_\_\_

  
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